

REMARKS

Entry of the foregoing and further consideration of the subject application in light of the remarks that follow and consistent with 37 C. F. 1.111 are hereby respectfully requested.

By this amendment, Claims 14, 15, 17, and 18 has been amended and now recite that the seed crystals are included in the molecular sieve synthesis mixture. Support for this amendment is found in several sections of the application including on Page 4, lines 26 to 29.

Objection to Claims

Claims 7 through 21 stand objected for being in improper dependent form. Applicants respectfully traverse this objection.

In making the objection, the Action states that Claims 7 through 21 are multiple dependent claims that depend upon other dependent claims.

Applicants respectfully submit that presently pending Claims 7 through 21 are not multiple dependent claims.

Many claims of the PCT application were multiple dependent claims. However, upon entering the U. S. from the PCT, all multiple dependent claims were changed to single dependency. The new claims were submitted to the United States Patent and Trademark Office in the substitute specification that accompanied the filing papers for this application.

Since none of the claims of this application are in multiple dependent claim format, withdrawal of this objection is respectfully requested. It is also requested that Claims 7 through 21 be examined on the merits.

REJECTION UNDER 35 U.S.C. § 112

Claims 14 through 18 stand rejected by the Examiner under 35 U.S.C. § 112, second paragraph. This rejection is respectfully traversed.

Applicants respectfully submit that the amendments to Claims 14, 15, 17, and 18 overcome this rejection. Specifically, Claims 14, 15, 17, and 18 have been amended to specify that the seed crystals are present in the synthesis mixture. Therefore, Claims 14, 15, 17, and 18 no longer recite that use of seed crystals. Claim 16 has not been amended because it does not recite use of seed crystals.

Withdrawal of this rejection is respectfully requested.

Rejection Under 35 U.S.C. § 101

Claims 14 through 18 stand rejected by the Examiner under 35 U.S.C. § 112, second paragraph. This rejection is respectfully traversed.

Applicants respectfully submit that the amendments to Claims 14, 15, 17, and 18 overcome this rejection. As described in the previous section of this Response, Claims 14, 15, 17, and 18 have been amended to recite that the seed crystals are present in the synthesis mixture and, therefore, no longer recite use of seed crystals. Claim 16 has not been amended because it does not recite use of seed crystals.

Withdrawal of this rejection is respectfully requested.

Rejection Under 35 U.S.C. § 102**Applicants' Invention**

Claims 1-21 are directed to the preparation of smaller size particles of crystalline molecular sieve. The process is carried out by: (a) separating from a synthesis mixture a

molecular sieve comprising larger and smaller particle sizes; (b) treating the synthesized molecular sieve to separate the larger particles from the smaller particles; and (c) recovering the smaller size particles. These particles find particular application in the manufacture of molecular sieves.

Claims 1 through 6 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,164,551 (Elliott, Jr.). This rejection is specially traversed, as the invention as defined in Claims 1 through 6, is submitted to be patentable over Elliott, Jr.

In making the rejection, the Action stated:

Elliott, Jr. discloses a method of making a zeolite in which a zeolite suspension is separated from its mother liquor by filtration, and subsequently washed. See col. 2, lines 10-25. The zeolite product obtained at this part in the process of Elliott, Jr. corresponds to the large particle fraction referred to in the present claims.

The mother liquor and wash water contains finely divided particles of a zeolite. Id. The finely divided zeolite product contained in the mother liquor/wash water corresponds to the smaller particle size referred to in the present claims.

The reference differs from the present claims by failing to disclose that the finely divided portion of zeolite is "suitable for use as seed crystals." However, the finely divided product of Elliott, Jr. is formed in a manner identical to the instant process. Since, the fine zeolite product of the portion is formed in a manner identical to the present claims, it is assumed that the fine zeolite of the reference is "suitable for use as seed crystals." See MPEP 2112.

Elliott, Jr. involves the manufacture of Type Y Zeolite using recycled mother liquor containing excess silicate. Elliott, Jr. is not concerned with recovering molecular sieve having small particle size.

Applicants submit that Elliott, Jr. does not disclose or suggest Applicants' claimed invention. Elliott, Jr. is merely involves recycling unreacted zeolite starting material, i.e., silicates, from a Type Y zeolite synthesis mixture.

The Type Y zeolite manufacturing procedure of Elliott, Jr. is set forth in the Figure and Column 2, lines 13-51 of Elliott, Jr. A summary of those portions of Elliott, Jr., shown as Steps 1-5, is set forth below.

1. Synthesize Y zeolite to form a material of finely divided Y zeolite suspended in a mother liquor. (Shown in the Figure and Column 2, lines 15 and 16)
2. Filter the product of step 1. during which the Y zeolite product is recovered, washed, and sent to storage. (Shown in the Figure and Column 2, lines 17 and 19)
3. Treat the combined mother liquor and the washwater with aluminum sulfate to precipitate a finely divided silica/alumina hydrogel. (Shown in the Figure and Column 2, lines 25 and 31)
4. Recover the precipitate by filtration, and wash the precipitate to provide a filter cake with the resulting wash water being discarded to the sewer. (Shown in the Figure and Column 2, lines 32 and 41)
5. Use the filter cake, i.e., the final product containing the recovered silicate, as a component of a subsequent zeolite synthesis mixture. (Shown in Column 2, lines 47 to 51)

Thus, Elliott, Jr. does not recover smaller size zeolite particles. Instead, Elliott, Jr. recovers excess silicate from the zeolite synthesis mixture to recycle the excess silicate in Y zeolite manufacture. The smaller size particles of the zeolite produced by Elliott, Jr.'s process, as shown in the Figure, are discarded into a sewer.

The differences between Applicants' claimed invention and Elliott, Jr. are understandable because Elliott, Jr. is only concerned with recovering silicate for recycle, while Applicants' invention is concerned with recovering molecular sieve of smaller particle size.

It is respectfully submitted that Elliott, Jr. does not disclose or suggest by Applicants' claimed invention. Withdrawal of this rejection is respectfully requested.

In view of the foregoing, it is respectfully submitted that all claims are in condition for allowance and favorable action thereon is respectfully requested.

Respectfully submitted,

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Edward F. Sherer
Edward F. Sherer
Attorney for the Applicant
Registration No. 29,588

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ExxonMobil Chemical Company
Law Technology
P. O. Box 2149
Baytown, Texas 77522-2149
Telephone: (281) 834-5933
Facsimile: (281) 834-2495

ATTACHMENT A**Marked-Up Version Of Amended Claims 14, 15, 17, and 18**

14. (Amended) In the synthesis of a crystalline molecular sieve by hydrothermal treatment of a synthesis mixture, the improvement comprising including in said synthesis mixture the [use of] seed crystals obtained by the process of claim 1 to accelerate the rate of production of the crystalline molecular sieve.

15. (Amended) In the synthesis of a crystalline molecular sieve by hydrothermal treatment of a synthesis mixture, the improvement comprising including in said synthesis mixture the [use of] seed crystals obtained by the process of claim 1 to control a characteristic of the resulting crystalline molecular sieve.

17. (Amended) In the synthesis of a crystalline molecular sieve by hydrothermal treatment of a synthesis mixture, the improvement comprising including in said synthesis mixture the [use of] seed crystals obtained by the process of claim 1 to facilitate the manufacture of a crystalline molecular sieve in a synthesis mixture substantially free from organic structure-directing agent.

18. (Amended) In the synthesis of a crystalline molecular sieve by hydrothermal treatment of a synthesis mixture, the improvement comprising including in said synthesis mixture the [use of] seed crystals obtained by the process of claim 1 to facilitate the manufacture of a crystalline molecular sieve, without stirring the synthesis mixture at least after the desired synthesis temperature has been reached.